Space Weather Forecast

Issued on Thursday, 06 July 2023 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of R1/R2 Radio Blackouts. Minor to Moderate Geomagnetic Storm possible late 06 July or early 07 July with CME arrival.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with a single Moderate-class flare originating from the largest and most magnetically complex sunspot region on the northwest horizon. This region has rotated round to the far side through this period. This leaves 6 numbered sunspots on the visible disc, with one region on the northeast and one on the south-central disc showing modest growth and complexity during the period, whilst two other regions in the southern central disc have decayed and their spots are becoming increasingly difficult to discern. The other two regions on the disc are relatively small and simple with little change observed.
No Earth directed Coronal Mass Ejections (CMEs) have been observed on available imagery in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind as observed at L1, perhaps indicates the arrival of a weak, transient CME. Solar wind speeds were slow, around 350 km/s but rose from 05/1500 UTC to around 420 km/s (slightly elevated). The Interplanetary Magnetic Field was weak, but increased from 05/1315 UTC, with moderate levels observed from 05/1843 UTC. However, the north-south component has continued to vary weakly. Geomagnetic activity has been mostly Quiet (Kp 0-2), but an Unsettled (Kp 3) period was observed 05/2100-2400 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is likely during the forecast period, with a chance of further Moderate-class flares, and a slight chance of an isolated Strong flare early in the period. The risk is mostly coming from the large and complex region just round the western horizon on the far side. As this region rotates further round the far side the flare risk reduces.

Solar Wind / Geomagnetic Activity: A CME from the southeast of the disc on 04 July has been analysed and appears to be Earth-directed, with a likely to arrival at Earth either late on the 06 or early on 07 July. Otherwise, solar winds are forecast to become elevated to around 500-600 km/s on day 2 (07 July) due to the arrival of coronal hole fast winds. Geomagnetic activity is forecast to be mainly Quiet to Unsettled at first, but increasing to Unsettled to Active with a risk of G1 or G2 (Minor or Moderate) storms due to the effects of the CME arrival either late on 06 July or during 07 July. There is also a very slight chance of G3 Strong storms, but with low confidence. Heightened geomagnetic activity is then possible through into 08 July, before waning during day 4 (09 July).

Energetic Particles / Solar Radiation: Solar radiation has a slight but declining chance of reaching the S1/Minor Storm threshold through the period. The risk reduces as the large and complex sunspot continues to rotate away from the northwest limb on the far side.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	60	30	5
Strong	G3	No	5	10	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	30	25	25
Very Active	R3 to R5 X	No	10	5	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	5	5	2
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.